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EXAMINER	
TORRES, JUAN A	

ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/814,114	FRANCA-NETO, LUIZ M.	
	Examiner	Art Unit	
	JUAN A. TORRES	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 June 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,7-11,13-15,18,19,22 and 27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,7-11,13-15,18,19,22 and 27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

The modifications to the specification were received 06/25/2008. These modifications are accepted by the Examiner.

In view of the amendment filed on 06/25/2008 the Examiner withdraws Specification objections of the previous Office action.

Claim Objections

Claim 27 is objected to because of the following informalities:

The recitation in lines 7-10 of claim 27

"translating the first bit stream into a second bit stream having data presented as at least two groups of substantially simultaneous bits; and

translating the first bit stream into a second bit stream having data presented as at least two groups of substantially simultaneous bits"

is improper, because it is improperly constructed, it is repeating the same limitation twice, this seems to be a copy and paste typo; it is suggested to be changed to

"translating the first bit stream into a second bit stream having data presented as one or more groups of substantially simultaneous bits; and

translating the second bit stream into the multi-tone communications signal comprising a number of substantially simultaneous tones not greater than a maximum number of the substantially simultaneous bits" (see claim 15)

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The modifications to the claims were received 06/25/2008. These modifications are accepted by the Examiner.

In view of the amendment filed on 06/25/2008 the Examiner withdraws 35 USC § 112 second paragraph to claim 19 of the previous Office action.

Response to Arguments

Regarding claims 15, 18 and 27:

Applicant's arguments filed 06/25/2008 have been fully considered but they are not persuasive.

The Applicant contends:

> "The Applicant submits that Rogerson does not disclose the feature "translating a first bit stream into **a multi-tone communications signal having a substantially simultaneous multi-tone signaling bandwidth of greater than about 20 percent of an associated carrier frequency"** as recited in claim 15. The Office asserts that figures 4, 16, and 26 as well as paragraphs [0076] and [0082] of Rogerson disclose this feature of claim 15. However, a close reading of Rogerson reveals that this assertion is incorrect. Actually, these cited portions of Rogerson do not mention **"carrier"** or **"carrier frequency"** at all, and thus cannot disclose **"a multi-tone communications signal having simultaneous multi-tone signaling bandwidth of greater than about 20 percent of an associated carrier frequency"**. Accordingly, Rogerson does not disclose the feature "translating a first bit stream into **a multi-tone communications signal having a substantially simultaneous multi-tone signaling bandwidth of greater than about 20 percent of an associated carrier frequency"** as recited in claim 15. In addition, the Office does not point out and the Applicant cannot find any other parts of Rogerson that disclose this feature of claim 15. For at least this reason, the Applicant respectfully submits that Rogerson does not anticipate claim 15 and its dependent claim 18. The above conclusion with respect to independent claim 15 also applies to independent claim 27, which has similar features to independent claim 15. Reconsideration and withdrawal of the rejections of claims 15, 18 and 27 under § 102(a) are thus respectfully requested" (emphasis in original).

The Examiner disagrees, and asserts that, as indicated in the previous Office action, Rogerson discloses to one of ordinary skill in the art translating a first bit stream

into a multi-tone communications signal having a substantially simultaneous multi-tone signaling bandwidth of greater than about 20 percent of an associated carrier frequency (figures 1-4 and 16 blocks 200 and 300 paragraph [0076] and [0082], see figure 4 for multi-tone and figure 26 for one implementation).

Rogerson specifically discloses in paragraph [0008] "Most existing wireless schemes transfer data via modulated continuous-wave carriers". With reference to figure 16 Rogerson discloses "FIG. 16 shows a block diagram of a transmitter 100 according to an embodiment of the invention. Encoder 200 receives a data signal S100 that includes ordered data values (i.e. ordered in time and/or space) and outputs a symbol stream S150 based on signal S100 to signal generator 300. Specifically, encoder 200 maps ordered sets of m data values to corresponding symbols, each symbol including a series of p ordered n-tuples. Based on symbol stream S150, signal generator 300 outputs a modulated signal S200 that includes clusters of bursts"

One of ordinary skill in the art will understand that "In telecommunications, modulation is the process of varying a periodic waveform, i.e. a tone, in order to use that signal to convey a message, in a similar fashion as a musician may modulate the tone from a musical instrument by varying its volume, timing and pitch. Normally a high-frequency sinusoid waveform is used as carrier signal. The three key parameters of a sine wave are its amplitude ("volume"), its phase ("timing") and its frequency ("pitch"), all of which can be modified in accordance with a low frequency information signal to obtain the modulated signal" (see wikipedia definition of modulation first paragraph http://en.wikipedia.org/wiki/Modulation).

For these reasons and the reason stated in the previous Office Action, the rejection of claims 15, 18 and 27 are maintained.

Regarding claims 1, 2-4, 19 and 22:

Applicant's arguments filed 06/25/2008 have been fully considered but they are not persuasive.

The Applicant contends:

> "Claim 1 recites "a multi-bit encoder coupled to a multi-tone generator to provide **a multi-tone communications signal having a substantially simultaneous multi-tone signaling bandwidth of greater than about 20 percent of an associated carrier frequency**" (emphasis added), similar in character to the feature of claim 15. For the reasons discussed above with respect to claim 15, the Applicant submits that Rogerson does not disclose this feature of claim 1. No combination of Walker with Rogerson remedies this deficiency. Thus, no combination of Walker and Walker teaches or suggests each and every claimed feature of claim 1. Thus, the Applicant respectfully submits that the rejection of claim 1 is unsupported. This same argument applies to dependent claims 2-4, as well as claims 19 and 22, which respectively have features similar to this feature of claim 1" (emphasis in original).

The Examiner disagrees, and asserts that, as indicated in the previous Office action, because the rejection of claim 15 is maintained for the same reason, the rejection of claims 1, 2-4, 19 and 22 are also maintained.

Regarding claims 7, 8-10, 11, 13 and 14:

Applicant's arguments filed 06/25/2008 have been fully considered but they are not persuasive.

The Applicant contends:

> "Amended claim 7 includes "a plurality ofphasor detectors to determine a presence of a plurality of tones included in **a multi-tone communications signal having a substantially simultaneous multi-tone signaling bandwidth of greater than about 20 percent of an associated carrier frequency** by comparing a combined amount of two measured orthogonal signal components to a threshold value". For the reasons discussed above with respect to claim 15, the Applicant submits that Rogerson does not

> disclose this feature of claim 7. No combination of Walker, O'Neill, and/or Rogerson remedies this deficiency. Thus, no combination of Rogerson, Walker, and/or O'Neill teaches or suggests each and every claimed feature of claim 7. Thus, the Applicant respectfully submits that the rejection of amended independent claim 7 and its dependent claims 8-10 is improper. This argument presented with respect to amended independent claim 7 also applies to independent claim 11 and its dependent claims 13 and 14, because independent claim 11 has features similar to this feature of claim 7." (emphasis in original).

The Examiner disagrees, and asserts that, as indicated in the previous Office action, because the rejection of claim 15 is maintained for the same reason, the rejection of claims 7, 8-10, 11, 13 and 14 are also maintained.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 22 and 27 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 22 and 27 are rejected because they are claiming a "nonfunctional descriptive material." Claims 22 and 27are claiming a machine-accessible medium "having associated information." The specification clearly discloses that "The article 685 may include a processor 687 coupled to a machine-accessible medium such as a memory 689 (e.g., removable storage media, as well as any memory including an electrical, optical, or electromagnetic conductor) having associated information 691 (e.g., computer program instructions and/or data)." Therefore that associated information could be only data, and "data" by itself, since there is no definition of what constitute "data", is non-functional material (see MPEP 2106.01)

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 15, 18 and 27 are rejected under 35 U.S.C. 102(a) as being clearly anticipated by Rogerson (US 20030099299 A1).

Regarding claim 15, Rogerson discloses translating a first bit stream into a multi-tone communications signal having a substantially simultaneous multi-tone signaling bandwidth of greater than about 20 percent of an associated carrier frequency (figure 16 blocks 200 and 300 paragraph [0076] and [0082], see figure 4 for multi-tone and figure 26 for one implementation); translating the first bit stream into a second bit stream having data presented as one or more groups of substantially simultaneous bits (figure 8 block T100 and figure 9 every n-tuples correspond to 4 bits paragraph [0089] and figure 16 block 200 paragraph [0126]); and translating the second bit stream into the multi-tone communications signal comprising a number of substantially simultaneous tones not greater than a maximum number of the substantially simultaneous bits (figure 2 uses 3 tones for transmitting the n-tuples).

Regarding claim 18, Rogerson discloses claim 15, Rogerson also discloses shifting the first bit stream to provide the second bit stream (figure 18 block 400 and figure 19, paragraphs [0134]-[0135]).

Regarding claim 27, Rogerson discloses translating a first bit stream into a multi-tone communications signal having a substantially simultaneous multi-tone signaling bandwidth of greater than about 20 percent of an associated carrier frequency (figure 16 blocks 200 and 300 paragraph [0076] and [0082], see figure 4 for multi-tone and figure 26 for one implementation); translating the first bit stream into a second bit stream having data presented as one or more groups of substantially simultaneous bits (figure 8 block T100 and figure 9 every n-tuples correspond to 4 bits paragraph [0089] and figure 16 block 200 paragraph [0126]); and translating the first bit stream into a second bit stream having data presented as one or more groups of substantially simultaneous bits (figure 8 block T100 and figure 9 every n-tuples correspond to 4 bits paragraph [0089] and figure 16 block 200 paragraph [0126]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rogerson (US 20030099299 A1) in view of Walker (US 20040048574 A1) (Rogerson is co-inventor).

Regarding claim 1, Rogerson discloses a multi-bit encoder coupled to a multi-tone generator to provide a multi-tone communications signal having a substantially simultaneous multi-tone signaling bandwidth of greater than about 20 percent of an

associated carrier frequency wherein the multi-tone generator is to generate a plurality of tones responsive to data from the multi-bit encoder (figure 16 blocks 200 and 300 paragraph [0076] and [0082], see figure 4 for multi-tone and figure 26 for one implementation). Rogerson doesn't disclose that a number of tones greater than a number of possible states of the data. Walker discloses that a number of tones greater than a number of possible states of the data (paragraph [0087], BPSK modulation has 2 levels). Rogerson and Walker teachings are analogous art because they are from the same field of endeavor of ultra-wide band communications. At the time of the invention it would have been obvious to a person of ordinary skill in the art to integrate in the system disclosed by Rogerson the BPSK modulation discloses by Walker. The suggestion/motivation for doing so would have been to use and effective modulation for low SNR (BPSK is one of the strongest modulation techniques that can work with low SNR).

Regarding claim 2, Rogerson and Walker disclose claim 1, Rogerson also discloses to receive a first bit stream and to provide a second bit stream having data presented as one or more groups of substantially simultaneous bits (figure 8 block T100 paragraph [0089] and figure 16 block 200 paragraph [0126]).

Regarding claim 3, Rogerson and Walker disclose claim 2, Rogerson also discloses a shift register (figure 18 block 400 and figure 19, paragraphs [0134]-[0135]).

Regarding claim 4, Rogerson and Walker disclose claim 1, Rogerson also discloses a master oscillator and at least one slave oscillator (figure 27 blocks 360 and 3400 and figure 19, paragraph [0147]).

Regarding claims 19 and 22, Rogerson discloses receiving a multi-tone communications signal at a plurality of phasor detectors to determine a presence of a number of substantially simultaneous tones included in a multi- tone communications signal having a substantially simultaneous multi-tone signaling bandwidth of greater than about 20 percent of an associated carrier frequency (figure 16 blocks 200 and 300 paragraph [0076] and [0082], see figure 4 for multi-tone and figure 26 for one implementation; figure 48 block 412 paragraph [0181] and figures 44-58); amplifying the multi-tone communications signal using an approximately equal gain prior to the comparing (figure 48 block 550 and figures 44-58); comparing a combined amount of measured signal in at least one of the number of substantially simultaneous tones to a threshold value (figure 45-48 edge detector block 450 with comparator 540 and figures 44-58); receiving multiple indications of the presence of the plurality of tones from a plurality of phasor detectors (figure 48 input block 420 paragraph [0177] and figures 44-58); and determining a received data output corresponding to the multiple indications (figure 48 block 420 paragraph [0177] and figures 44-58). Rogerson doesn't disclose that the signal is an orthogonal signal and that the antenna is an omnidirectional antenna. Walker discloses that the signal is an orthogonal signal (figure 24, paragraph [0087], QAM modulation). Rogerson and Walker teachings are analogous art because they are from the same field of endeavor of wireless communications. At the time of the invention it would have been obvious to a person of ordinary skill in the art to integrate in the system disclosed by Rogerson the QAM modulation discloses by Walker. The suggestion/motivation for doing so would have been to use high data rates

Claims 7-11, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rogerson (US 20030099299 A1) in view of Walker (US 20040048574 A1) (Rogerson is co-inventor), and further in view of O'Neill (US 5559866 A).

Regarding claim 7, Rogerson discloses a plurality of phasor detectors to determine a presence of a plurality of tones included in a multi-tone communications signal having a substantially simultaneous multi-tone signaling bandwidth of greater than about 20 percent of an associated carrier frequency (figure 16 blocks 200 and 300 paragraph [0076] and [0082], see figure 4 for multi-tone and figure 26 for one implementation) by comparing a combined amount to a threshold value (figure 48 block 412 paragraph [0181] and figures 44-58); and a distribution module couple to an antenna and to provide the multi- tone communications signal to the plurality of phasor detectors (figure 48 input block 412 paragraph [0181] and figures 44-58). Rogerson doesn't disclose that the signal is an orthogonal signal and that the antenna is an omnidirectional antenna. Walker discloses that the signal is an orthogonal signal (figure 24, paragraph [0087], QAM modulation). Rogerson and Walker teachings are analogous art because they are from the same field of endeavor of wireless communications. At the time of the invention it would have been obvious to a person of ordinary skill in the art to integrate in the system disclosed by Rogerson the QAM modulation discloses by Walker. The suggestion/motivation for doing so would have been to use high data rates. O'Neill discloses the use of an omnidirectional antenna (abstract). Rogerson, Walker and O'Neill teachings are analogous art because they are

from the same field of endeavor of wireless communications. At the time of the invention it would have been obvious to a person of ordinary skill in the art to integrate in the system disclosed by Rogerson and Walter the omnidirectional antenna discloses by O'Neill. The suggestion/motivation for doing so would have been to receiver the signal with equal gain in all directions reducing the complexity of the receiver.

Regarding claim 8, Rogerson, Walker and O'Neill disclose claim 7, Walter also discloses a quadrature detector (figure 24, paragraph [0087], QAM modulation). Rogerson and Walker teachings are analogous art because they are from the same field of endeavor of wireless communications. At the time of the invention it would have been obvious to a person of ordinary skill in the art to integrate in the system disclosed by Rogerson the QPSK modulation discloses by Walker. The suggestion/motivation for doing so would have been to use high data rates.

Regarding claim 9, Rogerson, Walker and O'Neill disclose claim 7, Walter also discloses a sine component and a cosine component (figure 24, paragraph [0087], QAM modulation). Rogerson and Walker teachings are analogous art because they are from the same field of endeavor of wireless communications. At the time of the invention it would have been obvious to a person of ordinary skill in the art to integrate in the system disclosed by Rogerson the QPSK modulation discloses by Walker. The suggestion/motivation for doing so would have been to use high data rates.

Regarding claim 10, Rogerson, Walker and O'Neill disclose claim 7, Rogerson also discloses an amplifier having an averaging automatic gain control to receive the

multi-tone communications signal from a distribution module and to apply a substantially equal gain to the plurality of tones (figure 48 block 550 and figures 44-58).

Regarding claim 11, Rogerson discloses a multi-bit encoder coupled to a multi-tone generator to provide a first multi-tone communications signal having a substantially simultaneous multi-tone signaling bandwidth of greater than about 20 percent of an associated carrier frequency (figure 16 blocks 200 and 300 paragraph [0076] and [0082], see figure 4 for multi-tone and figure 26 for one implementation); a plurality of phasor detectors to determine a presence of a plurality of tones included in a second multi-tone communications signal by comparing a combined amount of measured signal to a threshold value (figure 48 block 412 paragraph [0181] and figures 44-58); and a distribution module couple to an antenna and to provide the multi- tone communications signal to the plurality of phasor detectors (figure 48 input block 412 paragraph [0181] and figures 44-58). Rogerson doesn't disclose that the signal is an orthogonal signal and that the antenna is an omnidirectional antenna. Walker discloses that the signal is an orthogonal signal (figure 24, paragraph [0087], QAM modulation). Rogerson and Walker teachings are analogous art because they are from the same field of endeavor of wireless communications. At the time of the invention it would have been obvious to a person of ordinary skill in the art to integrate in the system disclosed by Rogerson the QAM modulation discloses by Walker. The suggestion/motivation for doing so would have been to use high data rates. O'Neill discloses the use of an omnidirectional antenna (abstract). Rogerson, Walker and O'Neill teachings are analogous art because they are from the same field of endeavor of wireless communications. At the time of the

invention it would have been obvious to a person of ordinary skill in the art to integrate in the system disclosed by Rogerson and Walter the omnidirectional antenna discloses by O'Neill. The suggestion/motivation for doing so would have been to receiver the signal with equal gain in all directions reducing the complexity of the receiver.

Regarding claim 13, Rogerson, Walker and O'Neill disclose claim 11, Rogerson also discloses a determination module to receive multiple indications of the presence of the plurality of tones from the plurality of phasor detectors and to determine a received data output corresponding to the multiple indications (figure 48 block 420 paragraph [0177] and figures 44-58).

Regarding claim 14, Rogerson, Walker and O'Neill disclose claim 11, Rogerson also discloses the plurality of 5 tones (figure 4). Walker discloses a number of 2 possible states of the data (paragraph [0087], BPSK modulation has 2 levels), so the number of tones is at least two times greater than a number of possible states of data in the second multi-tone communication signal. Rogerson and Walker teachings are analogous art because they are from the same field of endeavor of ultra-wide band communications. At the time of the invention it would have been obvious to a person of ordinary skill in the art to integrate in the system disclosed by Rogerson the BPSK modulation discloses by Walker. The suggestion/motivation for doing so would have been to use and effective modulation for low SNR (BPSK is one of the strongest modulation techniques that can work with low SNR).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUAN A. TORRES whose telephone number is (571)272-3119. The examiner can normally be reached on 8-6 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Juan Alberto Torres
07/28/2008

/Juan A Torres/
Examiner, Art Unit 2611